

La Nina Historical Impacts on South Central Texas from the Fall 1949/Winter 1950 to the Fall 2008/Winter 2009

The Climate Prediction Center on Thursday, December 16th issued outlooks that continue to heavily weight expected impacts for the U.S. from La Nina that is expected to continue for the rest of 2010 to the Spring of 2011. These outlooks include 3 month periods from January to March 2011 through March to May 2011. La Nina conditions highlight cooler than usual sea surface temperatures across the Tropical Pacific. This phenomena influences wind and weather patterns from the Fall through the Winter to Early Spring across the U.S. During La Nina, the probabilities of above normal temperatures and below median precipitation are enhanced in much of the southern U.S. from the Fall through the Winter and early Spring. With the presence of La Nina, the active wintertime jet stream, that can bring increasing chances of above normal precipitation, is displaced north of the Southern U.S., over the northern part of the country.

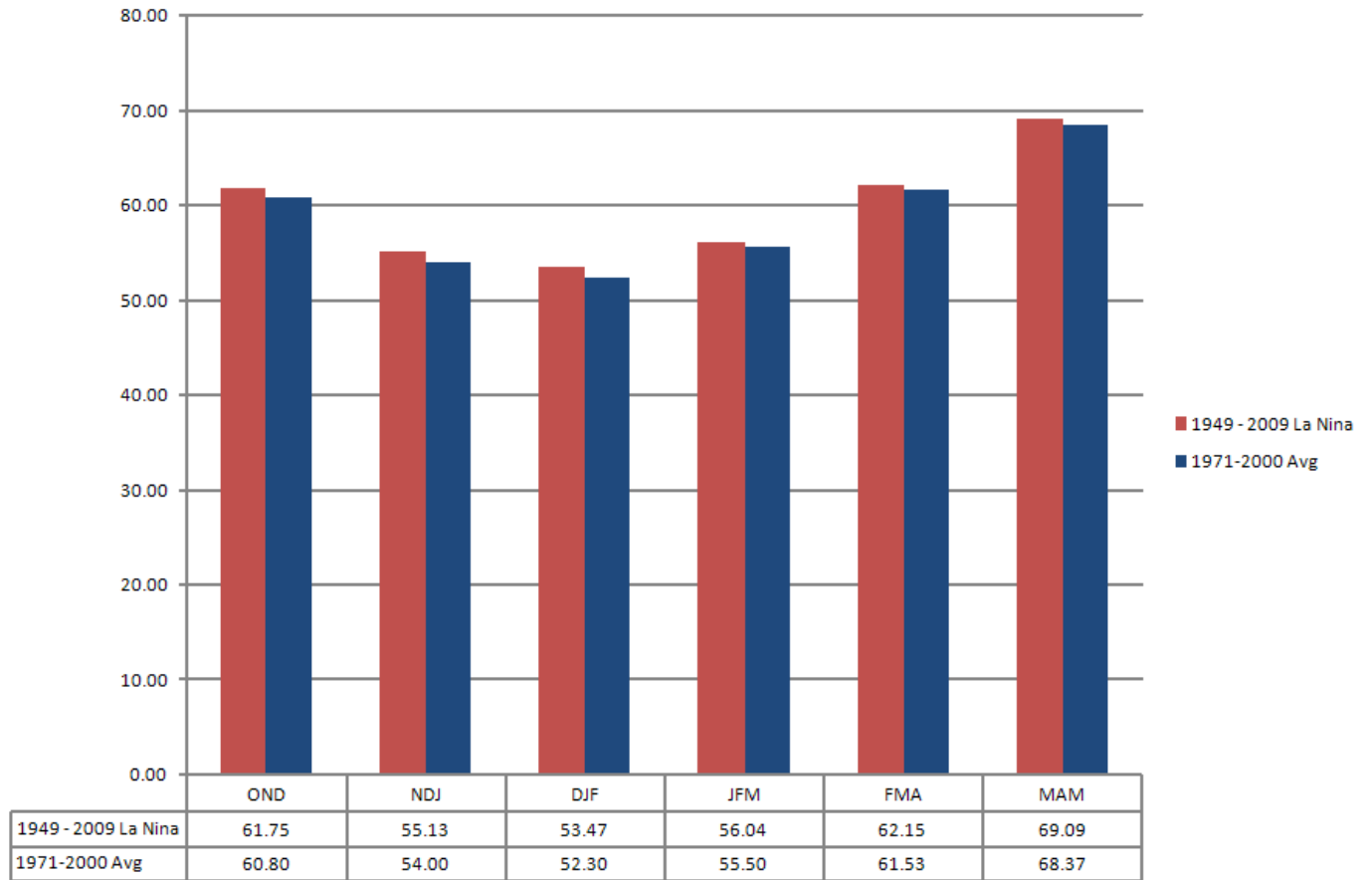
The Outlook issued Friday, December 31st for January 2011 across South Central Texas from the National Weather Service Climate Prediction Center calls for the average monthly temperature in January to have Equal Chances of being warmer, cooler, or near normal. For precipitation in January 2011, the outlook shows Equal Chances of being drier than usual; wetter than usual, or near normal January rainfall.

The extended outlook for South Central Texas from January to March 2011 shows Equal Chances of rainfall being above normal, near normal, and below normal. The 3 month rainfall outlooks from February to April 2011 and from March to May 2011 shows a 33.3 to 40 percent likelihood of rainfall less than normal; a 33.3 percent chance of rainfall near normal; and a 26.7 to 33.3 percent chance of rainfall above normal. The outlook for the average 3 month temperature from January to March, February to April, and March to May 2011 shows a 50 percent probability of being warmer than usual; a 33.3 percent chance of near normal temperatures; and a 16.7 percent chance of being cooler than usual. To See All the Outlooks for rainfall and temperature from the Climate Prediction Center [Click Here to See All Outlooks.](#) The Climate Prediction Center is currently downscaling 3 Month Outlooks for the average temperature over a 3 Month Time Span for locations across South Central Texas. [Click Here to see Downscaled 3 Month Temperature Outlooks for South Central Texas.](#) Note: All Outlooks reference the 1971 to 2000 Normal's.

The charts below show La Nina Composites from the Fall of 1949 and Winter of 1950 to the Fall of 2008 and Winter to early Spring of 2009. These charts show the average rainfall and temperature during La Nina Events for 3 month time periods, from October to December, OND; November to January, NDJ; December to February, DJF; January to March, JFM; February to April, FMA; and March to May, MAM. Although the averages and frequency of occurrence over a 3 month period were warmer and drier than usual, the averages and frequency of occurrence do not take into account episodic cold outbreaks or heavy precipitation events that were observed. To illustrate the extremes of variability that has occurred during La Nina events over South Central Texas since the Fall of 1949 and Winter/Early Spring 1950, the warmest, coldest, driest and wettest periods and their year is listed below each chart. The average conditions illustrated on the charts is also listed below the extremes. Additional information on the extremes of variability during La Nina events is listed after the charts.

Austin Mabry

**Austin Average Fall to Spring Temps 1949 - 2009 La Nina
vs. the 1971 - 2000 Average**

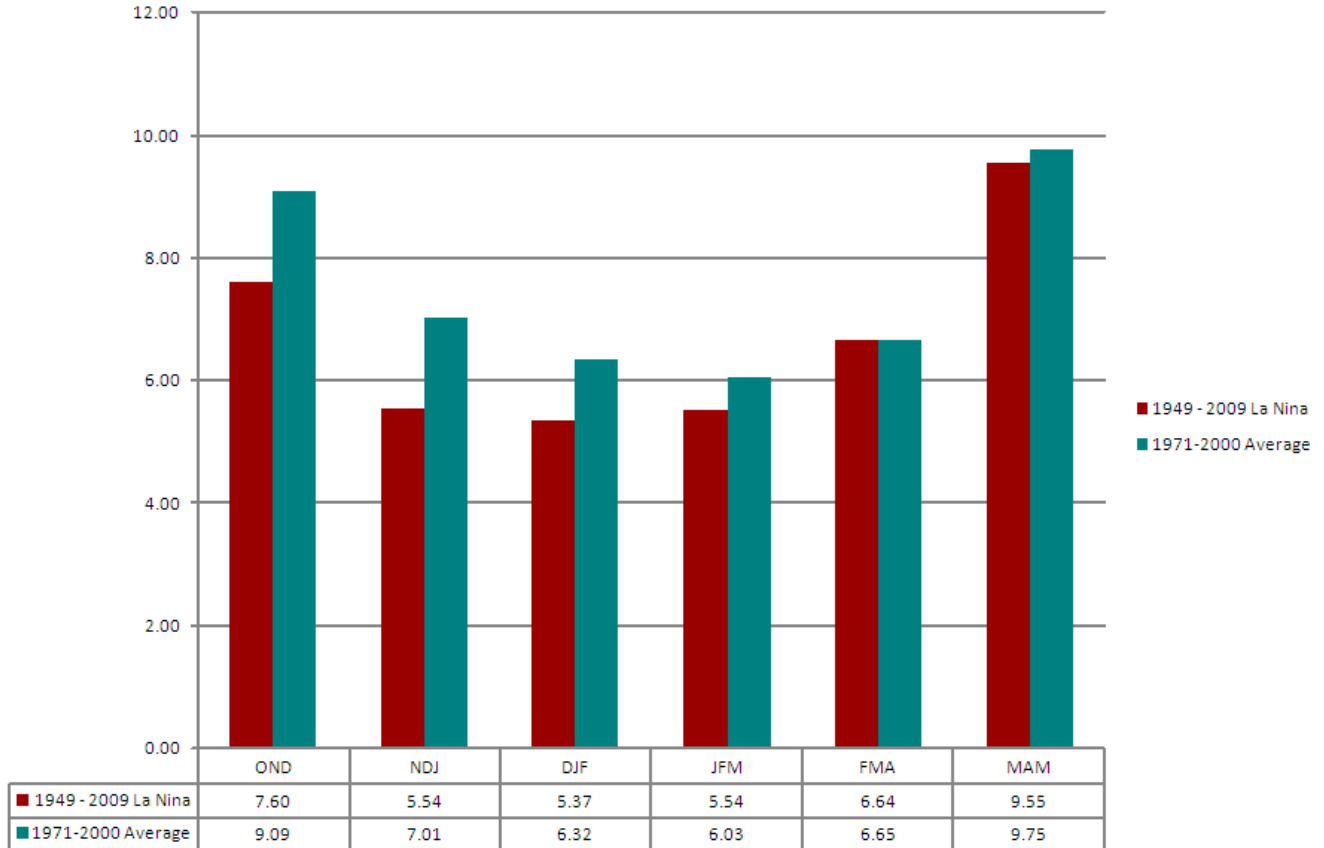


La Nina Extremes for the Average 3 Month Temperature at Austin Mabry 1949 to 2009

	OND	NDJ	DJF	JFM	FMA	MAM
Warmest	64.3-1988	58.6- 1988-89	57.7-1999-2000	61.3 - 2000	66.2 - 2000	71.9 - 2000
Coolest	57.6-2000	49.9-2000-01	48.1-1967-1968	50.7 - 1968	57.5 - 1968	66.3 - 1957
La Nina Average	61.75	55.13	53.47	56.04	62.15	69.09
1971-2000 Average	60.80	54.00	52.30	55.50	61.53	68.37

OND=Oct. to Dec.; NDJ=Nov. to Jan.; DJF=Dec. to Feb.; JFM=Jan. to Mar.; FMA=Feb. to Apr; MAM=Mar. to May

Austin Mabry Rainfall 1949 - 2009 La Nina vs. 1971 - 2000 Average



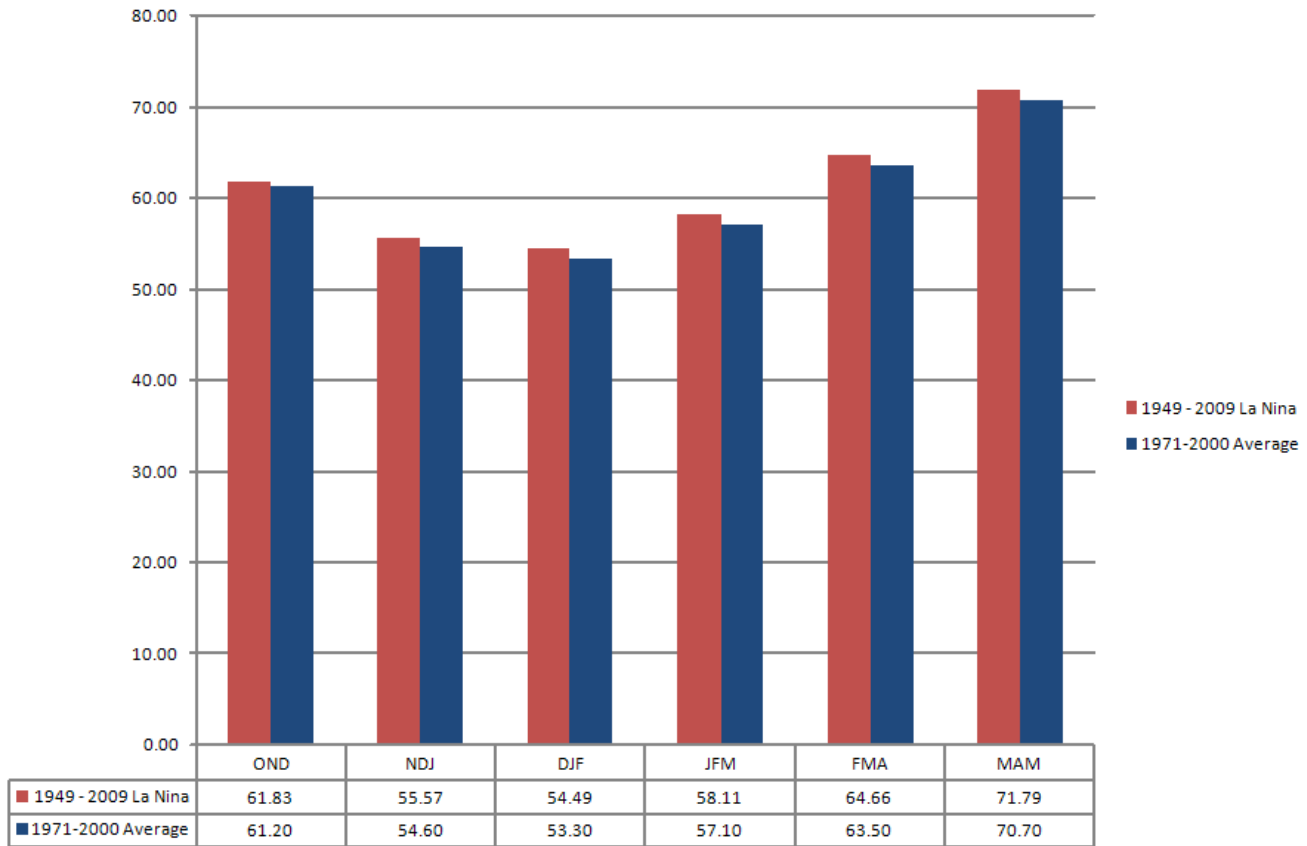
La Nina Extremes for the 3 Month Rainfall at Austin Mabry 1949 to 2009

	OND	NDJ	DJF	JFM	FMA	MAM
Wettest	17.99-1998	15.71-1967-68	12.99-1967-68	11.67-1968	17.65-1957	21.89-1957
Driest	0.62-1950	0.15-1970-71	0.84-1970-71	1.28-1996	1.77-1972	3.23-1971
La Nina Average	7.60	5.54	5.37	5.54	6.64	9.55
1971-2000 Average	9.09	7.01	6.32	6.03	6.65	9.75

OND=Oct. to Dec.; NDJ=Nov. to Jan.; DJF=Dec. to Feb.; JFM=Jan. to Mar.; FMA=Feb. to Apr.; MAM=Mar. to May

Del Rio

**Del Rio Average Fall to Spring Temps 1949 - 2009 La Nina
vs. the 1971 - 2000 Average**

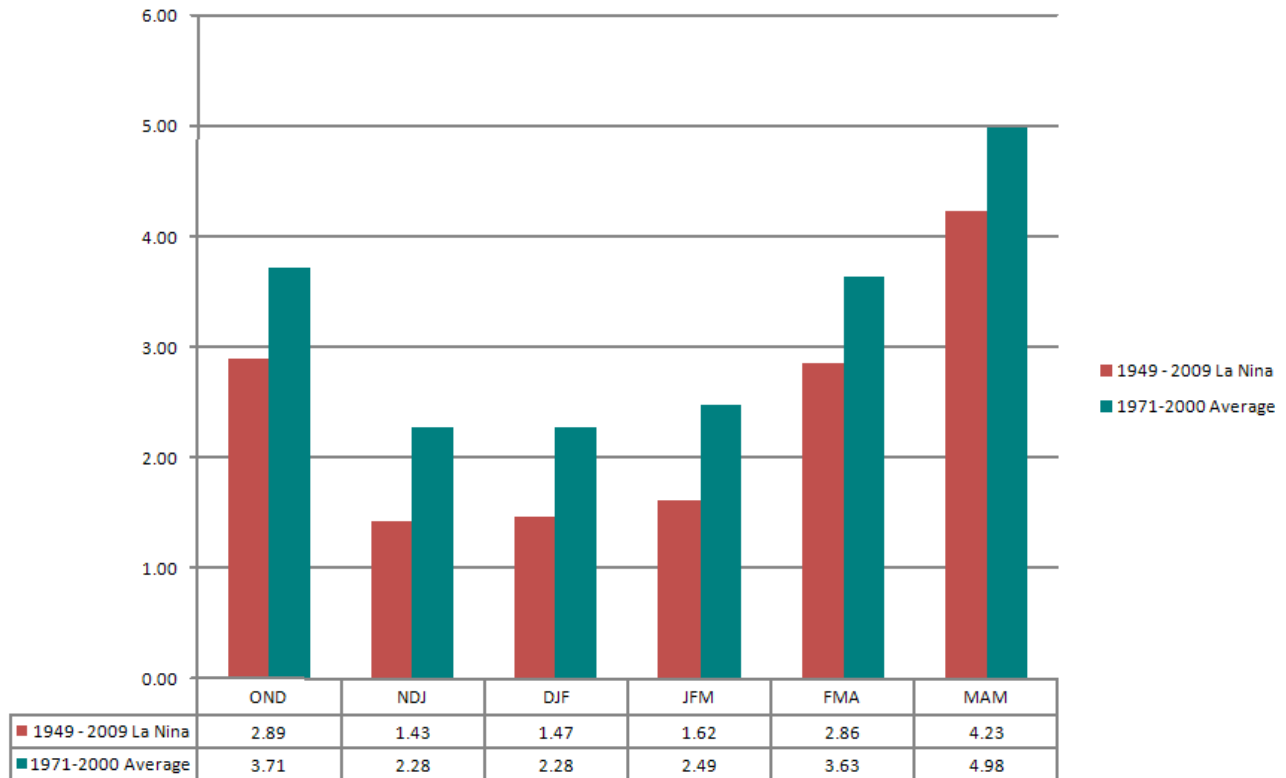


La Nina Extremes for the Average 3 Month Temperature at Del Rio 1949 to 2009

	OND	NDJ	DJF	JFM	FMA	MAM
Warmest	63.6–1962	59.2-1949-1950	58.3-1949-1950	63.1 - 2000	69.2 – 2000	75.9 – 2000
Coolest	58.1–2000	51.5-2000-2001	49.9-1967-1968	52.7 - 1968	59.3 - 1968	68.3 - 1968
La Nina Average	61.83	55.57	54.49	58.11	64.66	71.79
1971-2000 Average	61.20	54.60	53.30	57.10	63.50	70.70

OND=Oct. to Dec.; NDJ=Nov. to Jan.; DJF=Dec. to Feb.; JFM=Jan. to Mar.; FMA=Feb. to Apr; MAM=Mar. to May

Del Rio Rainfall 1949 - 2009 La Nina vs. the 1971 - 2000 Average



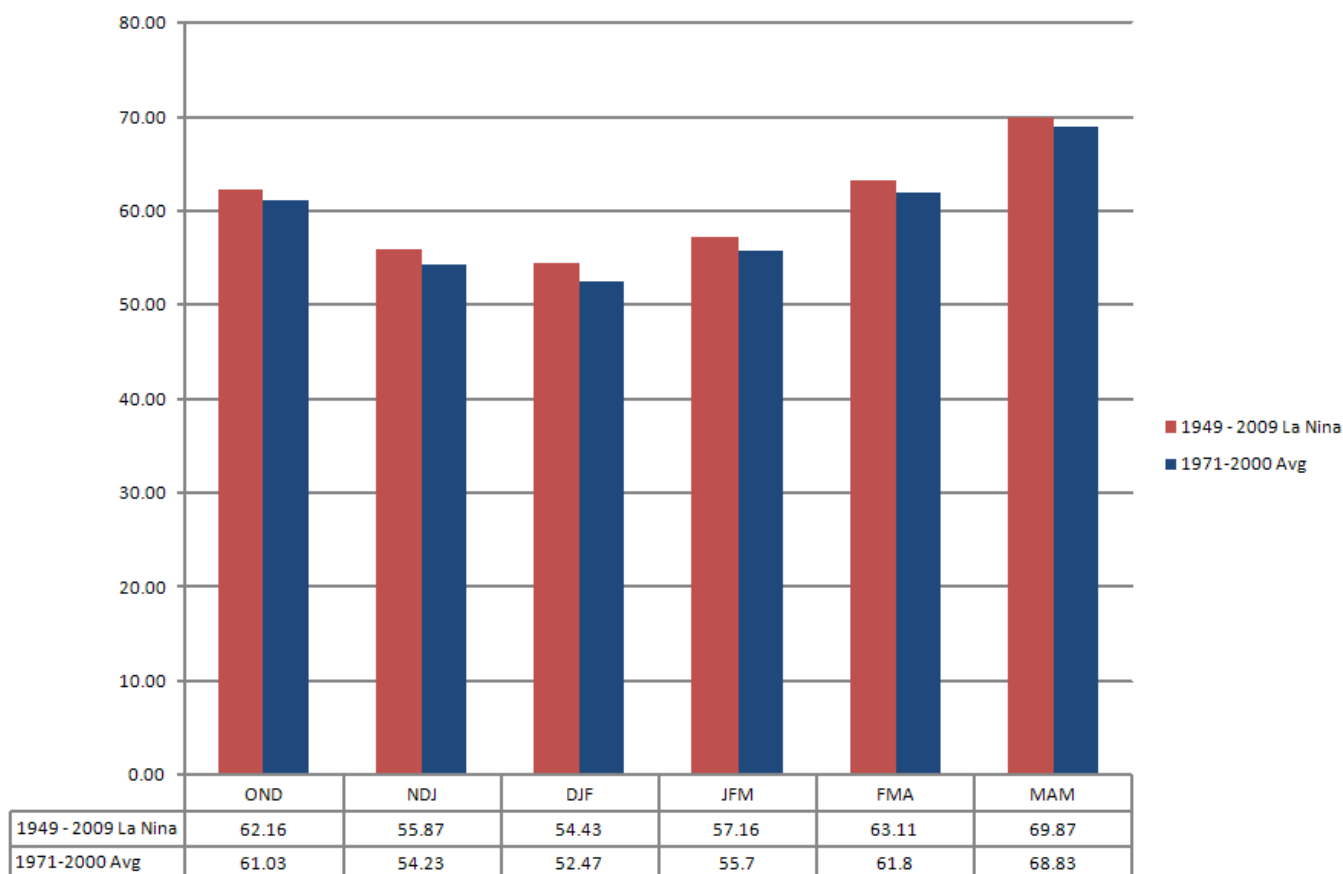
La Nina Extremes for the 3 Month Rainfall at Del Rio 1949 to 2009

	OND	NDJ	DJF	JFM	FMA	MAM
Wettest	8.33-2000	4.72-1984-1985	4.20-1984-85	3.34-1968	9.06-1957	18.35-1957
Driest	0.04-1950	0.04-1999-2000	0.05-1973-74	0.29-1975	0.39-1956	0.08-1956
La Nina Average	2.89	1.43	1.47	1.62	2.86	4.23
1971-2000 Average	3.71	2.28	2.28	2.49	3.63	4.98

OND=Oct. to Dec.; NDJ=Nov. to Jan.; DJF=Dec. to Feb.; JFM=Jan. to Mar.; FMA=Feb. to Apr; MAM=Mar. to May

San Antonio

**San Antonio Average Fall to Spring Temps 1949 - 2009 La Nina
vs. the 1971 - 2000 Average**

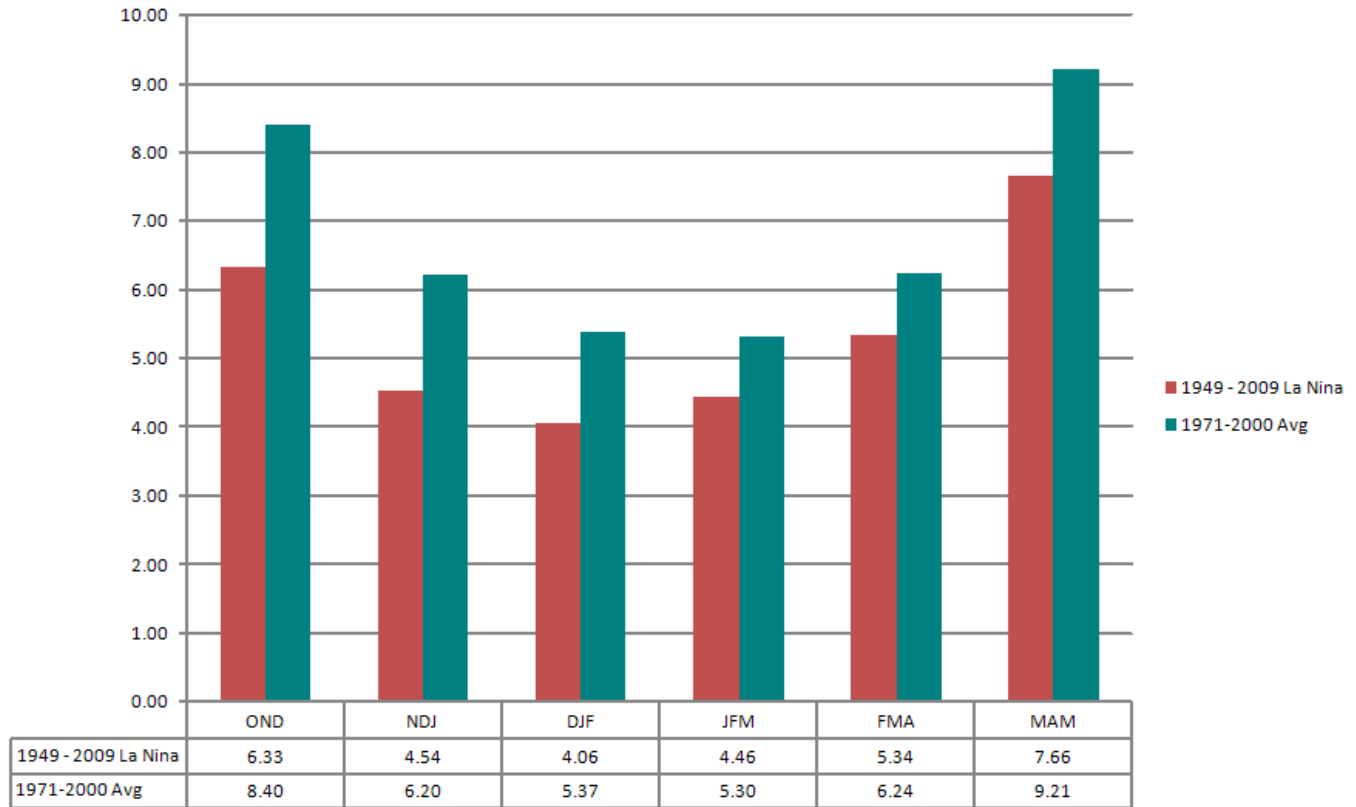


La Nina Extremes for the Average 3 Month Temperature at San Antonio 1949 to 2009

	OND	NDJ	DJF	JFM	FMA	MAM
Warmest	64.8-1988	59.1- 1988-89	57.8-1970-71	61.6 - 2000	66.8 - 2000	72.6 - 1963
Coolest	58.1-2000	50.8-2000-01	49.7-1967-68	52.0 - 1968	58.1 - 1968	67.1 - 1968
La Nina Average	62.16	55.87	54.43	57.16	63.11	69.87
1971-2000 Average	61.03	54.23	52.47	55.70	61.80	68.83

OND=Oct. to Dec.; NDJ=Nov. to Jan.; DJF=Dec. to Feb.; JFM=Jan. to Mar.; FMA=Feb. to Apr; MAM=Mar. to May

San Antonio Rainfall 1949 - 2009 La Nina vs. 1971-2000 Average



La Nina Extremes for the 3 Month Rainfall at San Antonio 1949 to 2009

	OND	NDJ	DJF	JFM	FMA	MAM
Wettest	21.86-1998	13.32-1967-68	11.75-1967-68	11.64-1968	16.04-1957	21.73-1957
Driest	0.24-1950	0.20-1970-71	0.44-1998-99	0.89-1971	1.61-1956	2.45-1996
La Nina Average	6.33	4.54	4.06	4.46	5.34	7.66
1971-2000 Average	8.40	6.20	5.37	5.30	6.24	9.21

OND=Oct. to Dec.; NDJ=Nov. to Jan.; DJF=Dec. to Feb.; JFM=Jan. to Mar.; FMA=Feb. to Apr.; MAM=Mar. to May

An average of all La Nina events since the Fall of 1949 to the Winter and Early Spring of 1950 shows that the 3 month precipitation on average from October to December through January to March is around 14 percent less than normal at Austin; around 21 percent less than normal at San Antonio; and around 32 percent less than normal at Del Rio. The period with the most impact at Del Rio was November to February. At Austin and San Antonio the most impacts on the average rain during La Nina Events was from October to February, except for the October 1998 to February 1999 case, when heavy rains came in October 1998 and then conditions became very dry from December 1998 through February 1999. From the Fall of 1949 and Winter of 1950 through the Fall of 2008 to Winter of 2009, the average 3 month temperature during La Nina events from October to December through January to March was around 1 degree above normal at Austin; 1.6 degrees above normal at San Antonio; and around 1 degree above normal at Del Rio. The most impacts for warmer than usual temperatures was from November to February at Austin and San Antonio and from December to May at Del Rio.

The averages do not pick up the extremes that have occurred since the Fall of 1949 and Winter of 1950. For South Central Texas, although on average moderate to strong La Nina conditions favor increasing probabilities of warmer and drier periods from the Fall through the Winter, there have been a few exceptions in the sub tropical climate over South Central Texas. Even though the active wintertime jet stream is displaced north of South Central Texas, there have been cases since the Fall of 1949 and Winter of 1950 where sub tropical weather patterns linked with features over the Tropics and Mid Latitudes to bring occasional cold outbreaks and periods of heavy rain and precipitation to South Central Texas. A few significant Arctic Outbreaks have come during La Nina Events, including December 1950; late January to February 1951; January and February 1985; February 1989; and January and February of 1996. Another feature that shows up with La Nina winters is more extremes between warm and cold, especially with the dry winters. February of 1996 was an extreme example where it was very cold at the beginning of the month, then set all time February Highs on February 21st, followed by very cold conditions at the end of February 1996. The February monthly record high at Del Rio of 99 on February 21, 1996 was later tied, when the high was 99 on February 25, 2008. The high on February 21, 1996 at Austin Mueller Airport was 99, at Austin Bergstrom 101, and at San Antonio 100 on February 21, 1996. The Winter of 1964/1965 had rainfall wetter than usual for Austin and San Antonio. The winter of 1967/1968 was wetter than usual at Austin, Del Rio, and San Antonio. In January 1968, a slow moving cutoff low came across the area from the west and caused a January flood, similar to the December 1991 floods. The January 1968 case occurred during a weak La Nina period, while the December of 1991 case occurred during a moderate to strong El Nino. January 1968 was the wettest January at San Antonio and the 4th wettest January at Austin Mabry. In November of 1974, during a La Nina period, a heavy rain event came to Austin, and caused flooding. From the Fall of 1984 through the Winter of 1985, during a La Nina period, wetter than usual conditions came most of the time, as relief from the dry period in 1984 came in the Fall of 1984. There were also a number of cold outbreaks in January and February of 1985. This included the heavy snow event that came in January 1985, a record for San Antonio and Del Rio and the 7th heaviest snow for Austin. In January 1985 the first snow event came January 2nd followed by a 2nd snow event from January 11th to 13th, 1985. January 1985 holds the record for the most snow in a month at San Antonio, 15.9 inches of snow, and at Del Rio, with 9.8 inches of snow. For snowfall at Austin January 1985 comes in 2nd place with 7.5 inches of snow, after the record of 9.7 inches of snow in January 1937. Floods from a heavy rain event in October 1998 during La Nina were followed by very dry conditions from December 1998 through the Winter of 1999. In the La Nina period from the Fall of 2000 through the Spring of 2001, wetter than usual conditions came, accompanied by occasional cold outbreaks.

